



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/125,128	08/11/1998	YUICHIRO IGUCHI	1084-98	7453
35811 7590 06/25/2007 IP GROUP OF DLA PIPER US LLP ONE LIBERTY PLACE 1650 MARKET ST, SUITE 4900 PHILADELPHIA, PA 19103			EXAMINER LIN, JAMES	
			ART UNIT 1762	PAPER NUMBER
			MAIL DATE 06/25/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/125,128	Applicant(s) IGUCHI ET AL.	
	Examiner Jimmy Lin	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 121-133, 138-151, 153-161, 163 and 164 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 121-133, 138-151, 153-161, 163 and 164 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 123 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 123 is inconsistent with parent claim 121 because the parent claim requires substantially all of the spaces to be coated with the phosphor while claim 123 only requires certain spaces to be coated. In particular, a plasma display panel has a repeating pattern of red, green, and blue. Each respective color would be separated by three times the pitch of the barrier ribs. If a phosphor paste of one color is to be deposited into all of the respective spaces for that respective color, then the pitch of the outlet holes must necessarily have a pitch that is three times greater than the pitch of the barrier ribs. In this case, the "m" of claim 123 cannot be any number within the claimed range of 1 to 10, but rather it can only be equal to 1.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

Art Unit: 1762

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 141, 143, 147-151, 153, and 164 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nanto et al. (U.S. Patent 5,921,836).

The rejection is of record in the Office Action filed 1/24/2007.

6. Claim 142 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nanto '836 as applied to claim 141 above, and further in view of Ravi-Chandar et al. (U.S. Patent 5,656,574).

The rejection is of record in the Office Action filed 1/24/2007.

7. Claim 146 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nanto '836 as applied to claim 141 and further in view of Mettenbrink (U.S. Patent 4,775,080).

The rejection is of record in the Office Action filed 1/24/2007.

8. Claim 153 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nanto '836 as applied above, and further in view of Koike et al. (U.S. Patent 5,767,876).

The rejection is of record in the Office Action filed 1/24/2007.

9. Claims 144-145 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nanto '836 as applied to claim 141 above, and further in view of Silverbrook (U.S. Patent 5,850,241).

The rejection is of record in the Office Action filed 1/24/2007.

10. Claims 121-123, 125-127, 129-134, 137, 141, 143, 147-154, 161, and 164 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki et al. (U.S. Patent No. 5,951,350) in view of Nanto '836.

Aoki teaches a method of making a plasma display (abstract) having a plurality of electrodes 16 and a plurality of barrier ribs 17, wherein phosphor layers are formed over the display electrodes and in spaces between the barrier ribs (Figs. 7 and 25). The phosphor paste can emit light of one color selected from the group consisting of red, green, and blue (col. 8,

lines 1-3). The phosphor paste is applied using a paste applicator comprising a plurality of nozzles (and therefore a plurality of holes) in a flat plate (Fig. 17). The nozzle has an aperture diameter of 34-150 μm (col. 7, lines 34-35). With a barrier rib pitch in the range of 0.15-0.3 mm (col. 6, lines 33-36), the pitch of the nozzles would be in the range of 0.45-1.5 mm because the pitch of the nozzles is three times the pitch of the barrier ribs. Aoki reasonably teaches that the phosphor of one color can be applied to all the spaces to be coated with that color in a one time relative movement of the nozzle and the substrate (Fig. 5).

Aoki does not explicitly teach that the paste applicator can have 150 to 2000 nozzles. However, Nanto teaches that a typical plasma display substrate can have 1921 barrier ribs (col. 8, lines 1-2), thereby having 1920 spaces between the ribs that require phosphor paste of a selected color to be deposited into. There will be 640 (i.e., 1920 divided by 3) spaces to be coated for each of the colors of red, blue, and green. Because Aoki reasonably teaches the deposition of a single color into all of the spaces in a single-pass method, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a paste applicator of Aoki having at least 640 nozzles with a reasonable expectation of success.

Claims 138,153,163: Aoki teaches that the paste applicator can be designed to discharge all three colors of red, blue, and green simultaneously (col. 8, lines 12-14). The combination of Aoki in view of Nanto would have reasonably suggested the use of a paste applicator having 1920 nozzles (i.e., 640 nozzles per color) in order to perform a single-pass deposition as taught in Aoki. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a paste applicator having 1920 nozzles that can discharge the colors of red, green, and blue simultaneously.

11. Claims 124 and 142 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki '350 in view of Nanto '836 as applied to claims 121 and 141 above, and further in view of Ravi-Chandar et al. (U.S. Patent 5,656,574).

The claims are rejected for substantially the same reasons as the rejection of record in the Office Action filed 1/24/2007.

12. Claims 128 and 146 are rejected under 35 U.S.C. 103(a) as being unpatentable over '836 as applied to claims 121 and 141 and further in view of Mettenbrink (U.S. Patent 4,775,080).

The claims are rejected for substantially the same reasons as the rejection of record in the Office Action filed 1/24/2007.

13. Claim 131 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki '350 in view of Nanto '836 as applied to claim 121 above and further in view of Osaka (U.S. Patent 5,277,840).

The claims are rejected for substantially the same reasons as the rejection of record in the Office Action filed 1/24/2007.

14. Claims 134-137, 152-153, 156, and 162-163 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki '350 in view of Nanto '836 as applied to claim 121 above and further in view of Koike et al. (U.S. Patent 5,767,876).

The claims are rejected for substantially the same reasons as the rejection of record in the Office Action filed 1/24/2007.

15. Claims 140 and 155 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki '350 in view of Nanto '836 as applied to claim 121 above, and further in view of Kohli et al. (U.S. Patent 5,741,746).

The claims are rejected for substantially the same reasons as the rejection of record in the Office Action filed 1/24/2007.

16. Claim 157 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki '350 in view of Nanto '836 in view of Koike '876 as applied to claim 156 above, and further in view of Kohli '746.

The claims are rejected for substantially the same reasons as the rejection of record in the Office Action filed 1/24/2007.

17. Claims 144-145 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki '350 in view of Nanto '836 as applied to claim 141 above, and further in view of Silverbrook (U.S. Patent 5,850,241).

The claims are rejected for substantially the same reasons as the rejection of record in the Office Action filed 1/24/2007.

18. Claims 158-160 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iguchi et al. (JP 08-162019, as provided by Applicant).

Iguchi discloses a method of making a plasma display [0001]. A fluorescent substance comprising of a phosphor powder and an organic binder [0018]-[0020] is ejected between barrier ribs via an ink-jet head nozzle ([0008]-[0009]; drawing 1). The phosphor layer is then heated [0027]. The nozzle is interpreted to be the claimed outlet hole.

Iguchi does not explicitly teach that 640 to 2000 nozzles are used. However, one of ordinary skill in the art would have recognized that using multiple nozzles would have deposited the phosphor of Iguchi with much greater efficiency. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used multiple nozzles, including the claimed range of nozzles, in the ink-jet deposition of Iguchi with a reasonable expectation of success. One would have been motivated to do so in order to have increased throughput and reduce manufacturing costs. Additionally, it is well settled that the mere duplication of parts has no patentable significance unless a new and unexpected result is produced (see MPEP 2144.04.VI.B.). It should be noted that these claims are not in commensurate in scope with the showing of unexpected results.

Iguchi does not explicitly teach that the average diameter of the outlet holes are 10 to 500 μm . However, Iguchi does teach that plasma cell pitch can be 120 μm [0035]. One of ordinary skill would have recognized that using a nozzle diameter greater than the cell pitch would have applied the phosphor to an adjacent cell, thereby contaminating the color of the adjacent cell. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a nozzle diameter of less than 120 μm in the method of making a plasma display of Iguchi with a reasonable expectation of success. One would have been motivated to do so in

Art Unit: 1762

order to have prevented contamination of adjacent cells. Overlapping ranges are *prima facie* evidence of obviousness (see MPEP 2144.05.I.).

Response to Arguments

19. Applicant's arguments, see pg. 18-27, filed 5/16/2007, with respect to claims 121-133, 140, 154-157, 161, and 163 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Aoki '350 in view of Nanto '836. It should be noted that if the Applicant is going to argue that Aoki '350 is not prior art with the claim of an earlier filing date of a foreign priority, the Applicant is suggested to *specifically* point out the support found in the foreign patent or patent application.

20. Applicant's arguments, see pg. 22, filed 5/16/2007, with respect to the rejection(s) of claim(s) 158-160 under 35 U.S.C. 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Iguchi '019.

21. Applicant's arguments filed 5/16/2007 have been fully considered but they are not persuasive.

The Applicant argues on pg. 23 that claim 141 is commensurate in scope with the showing of unexpected results. Although the claim requires "a plurality of outlet holes to discharge the phosphor paste from the manifold to all of the spaces to be coated with the phosphor paste for emitting light of the selected color" and "a moving device that moves the table and the paste applicator relative to each other in a one time relative movement", the claim is not limited to deposition into all of the spaces for the respective selected color because the claim encompasses, e.g., half of the spaces to be coated with the selected color in a first pass and the other half is coated in a second pass. The Applicant is advised to amend ~~the~~^{the} limitation of "a moving device that moves the table and the paste applicator relative to each other in a one time relative movement" to "a moving device that moves the table and the paste applicator relative to each other so that all of the spaces to be coated with the phosphor paste for emitting light of the

Art Unit: 1762

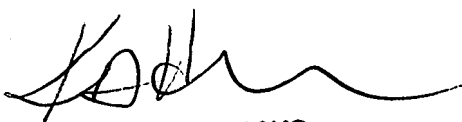
selected color are coated in a one time relative movement” in order for the claim to be in commensurate in scope with the showing of unexpected results. The same is applied to claims 153 and 164.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is 571-272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JL
JL


KEITH HENDRICKS
PRIMARY EXAMINER